



TREND ANALYSIS OF AREA, PRODUCTION AND PRODUCTIVITY OF RICE IN ALMORA DISTRICT, (UTTARAKHAND) INDIA

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ABSTRACT

Rice is an important part of India's economy. Rice is a rich source of carbohydrates, which is the main fuel source of the body. Rice is the staple food grain for 70% of the population. India is the second largest producer and exporter of rice in the world. Rice is one of the main cereals of India. India has large area for rice cultivation. It is the main crop of the country. Rice is a food crop and being a tropical plant, it thrives in the hot and humid climates. It is mainly grown in rain fed areas where there is heavy annual rainfall. It is also considered as the kharif crop of India. Rice requires a temperature of 25°C and above and a height of more than 100cm. For this it is grown in different types of soil like silt, loam and gravel. Rice provides energy to the body. The rice production potential of Punjab is 3838 Kg/hac which are the highest among other states. Rice production was 53.6MT in 1980 and has increased to 120MT in the financial year 2020-2021 according to the world estimates, the production of rice by 2030 is likely to be 567.3MT, the area is about 163.1M/HA and the productivity is 3.48 T/ha. The study has been carried out based on secondary data and the data was collected for the periods from 2011-12 to 2020-21 from various publications and websites (Agriculture Statistics at a Glance, Directorate of Economics and Statistics, Ministry of Agriculture and Government of India 2020 etc.).

KEYWORDS: Rice, Carbohydrates, Cultivation, Potential, Humid, Production

INTRODUCTION

Rice is an important part of India's economy. Rice is a rich source of carbohydrates, which is the main fuel source of the body. It keeps the body energetic and satisfied. Rice is rich in carbs which provide us with energy and reduce the risk of heart disease and stroke. Rice contains many nutrients; it is considered a good source of folate. Rice is the staple food grain for 70% of the population. India is the second largest producer and exporter of rice in the world. Rice is one of the main cereals of India. India has large area for rice cultivation. It is the main crop of the country. Rice is a food crop and being a tropical plant, it thrives in the hot and humid climates. It is mainly grown in rain fed areas where there is heavy annual rainfall. It is also considered as the kharif crop of India. Rice requires a temperature of 25°C and above and a height of more than 100cm. For this it is grown in different types of soil like silt, loam and gravel. Rice provides energy to the body. Rice is grown in almost half of the states of India, mainly in West Bengal, Uttar Pradesh, Andhra Pradesh, Assam, Haryana, Bihar, Odisha and Punjab. West Bengal is the largest rice producing state in India which tops the list of rice producing states with an annual production of 15.3MT. This single state produces more than 13.95% of India's rice.



This state produces 2600Kg/hac rice. After this, Uttar Pradesh is in second place, whose annual production of rice is about 13.75MT. However, low productivity is 2390Kg/ha less than other countries. The rice production potential of Punjab is 3838 Kg/hac which are the highest among other states. Rice production was 53.6MT in 1980 and has increased to 120MT in

the financial year 2020-2021. According to the world estimates, the production of rice by 2030 is likely to be 567.3MT, the area is about 163.1M/HA and the productivity is 3.48 T/HA. Rice export by India has increased by 44% in 2020 as compared to 2019.

Means 55379 crore to 65298 crore and in 2022 rice exported 721 crore billion. More than 6,000 varieties of rice grown in India. More than 6000 varieties of rice were grown in India but thousands of varieties of rice have been lost in the last 40 years. Green revolution technology improved production around the world. But different types of rice are still grown and eaten in India like Brown rice, Basmati rice, Jasmine rice, Mogra rice, Bamboo rice, Wild rice, Black rice, Red rice, White rice, Bomba rice, Purple rice and sushi rice etc.

REVIEW OF LITERATURE

Katha Reddy Baswanth Kumar, M. Anji Reddy, K.R. Karunakaran and K.B. Shafer (9 oct 2021), "Trend & instability index analysis in Paddy crop area, productivity and production across district in Andhra Pradesh". In this study, the volatility index of area, productivity and production of Paddy crop has been analyzed in the entire district of Andhra Pradesh. In this, data has been collected from the directorate for the Paddy cultivation area from the year 1991-1992 to 2018-2019. Therefore, the results are that the area under Paddy cultivation has changed in the study area with respect to the production of Paddy productivity over time. Between 1991-1992 and 2018-2019, the overall rice growth rate of the region declined by 0.5%.

Ashkan Nabavi- Pelesaraei, Shahin Rafiee, Seyed Saeid Mohtosebi, Homa Hosseinzaden-Bandbofha, Kwokwing Chau (15 Dec 2018), "Assessment of optimized pattern in milling factories of rice production based on energy,

environmental and economic objectives". The objective of this study was to conduct energy optimization economic analysis and life cycle evaluation in the conversion of Paddy to white rice by envelopment (DEA) and multi objective genetic algorithm (MOGA) data. For this, 60 milling factories were assessed in Gulian province of Iran. The results show that the amount of energy input and output in converting Paddy to white rice was 6817.31 MJTIP-1 and 11894.64MJTIP-2, respectively, and the background system for natural gas inside the factory in the life cycle. It can be said that MGOA is a suitable method to convert money into white rice inputs to achieve energy, environmental and economic efficiency.

Marianl Silvaade Miranda, Marina Leite Fonseca, Alexandre Lima, Tatiane, Faustino demoraes, Flavio Aparicido Rodrigues (22 August 2015), "Environmental impacts of rice cultivation". The major environmental aspects related to rice cultivation are described in this paper. Rice production generally requires large floodplain areas. Rice cultivation produces many greenhouse gases such as CO₂, CH₄, NO, and contributes decisively to global warming. Therefore, by using bioremediation and other techniques, possible improvements can be made in farming by mitigation fertilizers and other chemicals.

Michele Pittol, Lisa Durso, Victor Hugo Valiati & Lidia Mariana Fiuza (25 September 2015), "Agronomic and environmental aspects of diazotrophic bacteria in rice fields". This paper provides an overview of elements affecting living and plant-associated nitrogen N – fixing bacterial community compositions in wet rice cultivation. Ecosystem characteristics of rice paddy favor N – fertilizer loss, which in turn has negative effects on the environment, was partially remedied by managing and promoting the activities of N – fixing microorganisms. Hence this change leads to a cleaner approach which improves crop production while maintaining sustainability.

Susan R. McCouch & CGSNL (15 August 2008), "Gene Nomenclature System for Rice". This study was carried out to describe the gene based on the information of the DNA, RNA and protein sequence. It was determined by biochemical and phenotypic traits. Ricer attempts to harmonize the gene nomenclature system with that of other model organisms. Hence newly identified rice gene can now be registered online.

OBJECTIVES OF THE STUDY

1. To know about the Rice cultivation in India and the state of Uttarakhand.
2. To know about the Rice cultivation in Almora district, Uttarakhand.

METHODOLOGY OF THE STUDY

The study is based on secondary data. The secondary data are collected from the records of agricultural department, articles, annual statistical, magazine and various journals, text book and website etc.

DATA ANALYSIS

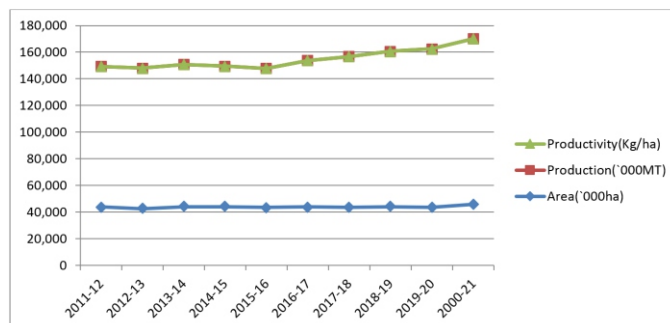
Area, Production And Productivity of Rice in India

year	Area('000HA)	Production('000MT)	Productivity(Kg/ha)
2011-12	44006	105301	3.6
2012-13	42754	105241	3.7
2013-14	44136	106646	3.6
2014-15	44110	105482	3.6
2015-16	43499	104408	3.6

2016-17	43994	109698	3.7
2017-18	43774	112760	3.9
2018-19	44156	116480	4
2019-20	43662	118870	4.1
2020-21	45769	124370	4.1

(Source-Secondary)

TABLE NO - 01



The Table No – 01 shows that production of rice in the year of 2020-2021 was 124370 MT and area was 45769HA in India. It is the largest area and production between 2011-12.

Area, Production And Productivity of Rice in Different States of India (2020-21)

S.I No	State's Name	Production (Thousand Tonnes)
1	West Bengal	16762.7
2	Uttar Pradesh	15273.4
3	Punjab	12885
4	Telangana	12302.2
5	Odisha	9137
6	Tamil Nadu	8067.3
7	Chhattisgarh	7897.7
8	Andra Pradesh	7789.2
9	Bihar	7064.1
10	Assam	5268
11	Madhya Pradesh	4814.9
12	Haryana	4618
13	Karnataka	4333.4
14	Maharashtra	3631.5
15	Jharkhand	2927.6
16	Gujarat	2115.4
17	Tripura	803.1
18	Uttarakhand	710.7
19	Kerala	630
20	Manipur	602.2
21	Jammu & Kashmir	581.5
22	Rajasthan	478.6
23	Nagaland	367.4
24	Meghalaya	295.8
25	Arunachal Pradesh	247.1
26	Himanchal Pradesh	140.5
27	Goa	87.3
28	Mizoram	62.2
29	Sikkim	16.2
30	Puducherry	0
	ALL INDIA	130290.6

(Source-Secondary)

TABLE NO - 02

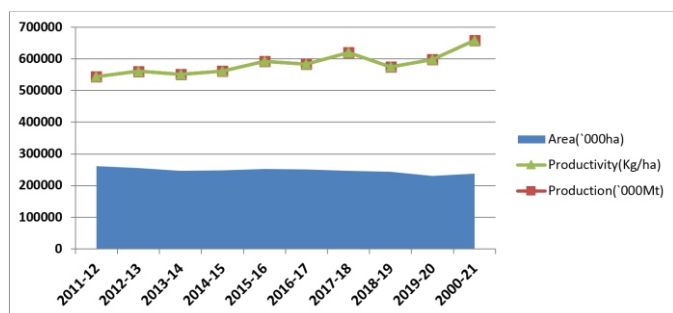
The West Bengal largest rice producing state in India. The table No – 02 leading rice producing states in India. Production in million tones was the year 2020-2021.

Area, Production And Productivity of Rice in Uttarakhand

S.I No	year	Area('000ha)	Production('000MT)	Productivity(Kg/ha)
1	2011-12	261319	544497	20.84
2	2012-13	255037	561339	22.01
3	2013-14	246959	551758	22.34
4	2014-15	247698	561856	22.68
5	2015-16	252163	591755	23.47
6	2016-17	251498	582720	23.17
7	2017-18	246539	620027	25.15
8	2018-19	243666	574963	23.6
9	2019-20	229920	597655	25.99
10	2020-21	238469	658747	27.62

(Source-Secondary)

TABLE NO - 03



The table no – 03 shows that production of rice in the year of 2020-21 was 658747MT and area was 238469HA in Uttarakhand, which shows that after 2011-12, production of rice is continuously increasing in Uttarakhand.

Area, Production And Productivity of Rice in Uttarakhand District (2020-2021)

S.I No	District's name	Area('000ha)	Production('000MT)	Productivity(Kg/ha)
1	Almora	11933	14603	12.24
2	Bageshwar	14160	22261	15.72
3	Champawatt	4764	6665	13.99
4	Nainital	11512	39410	34.23
5	Pithoragar	17518	23933	13.66
6	Udhamshingnager	108249	404676	37.38
7	Chamoli	11389	18639	16.37
8	Deharadoun	8355	24168	28.93
9	Haridwar	15253	37143	24.35
10	Porigharwal	7488	12430	16.6
11	Rudraprag	7494	10044	13.4
12	Tihari	10472	25896	24.73
13	Uttarkasi	9882	18879	19.1

(Source-Secondary)

TABLE NO - 04

The table no – 04 show that during 2020-21, Udham shing nager district had the highest production of rice.

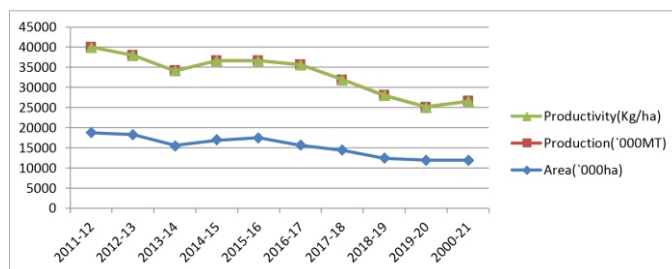
Area, Production and Productivity of Rice in Almoradistrict

S.I No	year	Area('000ha)	Production('000MT)	Productivity(Kg/ha)
1	2011-12	18736	21252	11.34
2	2012-13	18288	19656	10.75
3	2013-14	15597	18545	11.89
4	2014-15	16897	19776	11.7
5	2015-16	17526	19096	10.9

6	2016-17	15643	20035	12.81
7	2017-18	14389	17563	12.21
8	2018-19	12452	15578	12.51
9	2019-20	11988	13192	11
10	2020-21	11933	14603	12.24

(Source-Secondary)

TABLE NO - 05



The table no 05 shows that area and production of rice in Almora district in the year of 2020-21 was 11933HA and 14603MT in Almora district. Which shows that after 2011-12, production of Rice is continuously falling down in Almora district.

SUGGESTIONS

1. The production of rice in Almora district is continuously decreasing in every year. So new efforts in production of rice and biotechnology research can help in production of high quality seeds for the farmers of Almora.
2. The storage and transport facilities should be arranged near market and production area.
3. The government should provide subsidy for cultivators.
4. There is a need to strengthen the rice extension network. Mahatma Gandhi National Rural Employment Guarantee Scheme can be put to better use to overcome the shortage of workers.
5. Development of credit, marketing system, implementation of land reforms and providing better technology.

CONCLUSION

This study has analysed the based the trend in area, production and productivity of rice. It was found in the data that the production of rice in India is continuously increasing. It 2020-21, the production of rice in India has been 124370MT. In India, rice is produced the most in the state of West Bengal. Rice production was 16762.7MT in 2020-21.

The production of rice in Uttarakhand state is continuously increasing sine 2011-12, but in Almora district production of rice is continuously decreasing since 2011-12, which does not bode well for the production of rice production plays an important role in improving the standard of living in Almora district. There has been a sharp decline in the production and consumption of rice over the years.

Thus there is needed to take up production enhancing measures in rice like varietal improvement, improved cultural practices and irrigation facilities. Government intervention needs to focus on spreading rice as a wonder grain for dry lands and infant nutrition. And also government is showing the interest in its development and the proposal for the healthy operation of the cultivate system and economic development of agriculture sector. More over this sector nowadays going backward, so government should implement good plans for development of this sector.

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